L108 ANSWER 17 OF [redacted] HCAPLUS COPYRIGHT 2002 ACS
AN 1989:87299 HCAPLUS
DN 110:87299
TI Preparation of amorphous **calcium-magnesium phosphates** at pH 7 and characterization by x-ray absorption and Fourier transform infrared spectroscopy
AU Holt, C.; Van Kemenade, M. J. J. M.; Harries, J. E.; Nelson, L. S.; Bailey, R. T.; Hukins, D. W. L.; Hasnain, S. S.; De Bruyn, P. L.
CS Hannah Res. Inst., Ayr, KA6 5HL, UK
SO J. Cryst. Growth (1988), 92(1-2), 239-52
CODEN: JCRGAE; ISSN: 0022-0248
DT Journal
LA English
CC 78-5 (Inorganic Chemicals and Reactions)
AB Amorphous **Ca Mg phosphates** were prepd. by pptn. from moderately supersatd. aq. solns. at pH 7. Chem. anal. of the samples by ion chromatog. showed that .ltoreq.50% of the **phosphate** ions were protonated, the proportion increasing with the **Mg** to **Ca** ion activity ratio in the soln. When left in contact with the supernatant, the amorphous ppts. matured to form the cryst. CaHPO4.2H2O. The amorphous phases were characterized by x-ray absorption spectroscopy and by Fourier transform IR spectroscopy and their properties compared with those of a basic amorphous **tricalcium phosphate** pptd. at pH 10. The x-ray absorption spectra near the K edge of **Ca** were very similar for all samples but there were differences in the IR spectra between the basic and the more acidic salts. In the **phosphate** stretching region, the main band of the more acidic materials occurred at higher wavenumber and was broader. Also there was a broad band of medium intensity at .apprx.890 cm-1 whereas there was virtually no absorption band in this region in the spectrum of amorphous Ca3(**PO4**)2. The acidic amorphous **Ca phosphates** may be useful as model compds. in describing some complex biol. **Ca phosphates** that form near neutral pH.
ST **calcium magnesium phosphate** amorphous; EXAFS
IT **calcium magnesium phosphate** amorphous
X-ray spectra
(EXAFS, of amorphous **calcium magnesium phosphate**)
IT 25618-23-9P, **Calcium magnesium phosphate**
119029-00-4P, **Calcium magnesium** hydroxide **phosphate**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and EXAFS and IR spectra of amorphous)
IT 7778-77-0
RL: RCT (Reactant)
(reactions of, with **calcium nitrate** and **magnesium nitrate**)

IT **10377-60-3**, **Magnesium dinitrate**
RL: RCT (Reactant)
(reactions of, with potassium **phosphate** and **calcium nitrate**)
IT **10124-37-5**, **Calcium dinitrate**
RL: RCT (Reactant)
(reactions of, with potassium **phosphate** and **magnesium nitrate**)
IT **119029-00-4P**, **Calcium magnesium** hydroxide **phosphate**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and EXAFS and IR spectra of amorphous)
RN 119029-00-4 HCAPLUS
CN Calcium magnesium hydroxide phosphate (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO		
O4P	x	14280-30-9

L108 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:514017 HCAPLUS
DN 125:204451
TI Preparation and characterization of **magnesium-calcium hydroxyapatites**
AU Yasukawa, Akemi; Ouchi, Satoshi; Kandori, Kazuhiko; Ishikawa, Tatsuo
CS Sch. Chem., Osaka Univ. Educ., Kashiwara, 582, Japan
SO Journal of Materials Chemistry (1996), 6(8), 1401-1405
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 13
AB **Magnesium-calcium hydroxyapatite** (MgCaHAP) solid solns. have been prepd. by a wet method from aq. solns. with different molar ratios, **Mg/(Mg + Ca)**, ranging from 0 to 0.5. The MgCaHAP particles formed were characterized by XRD, FTIR, TEM, ICP, TG-DTA and gas adsorption techniques. The **Mg/(Mg + Ca)** ratios of the formed MgCaHAP particles were less than those of the tarting solns. With increasing **Mg** content, the particles became less cryst. and agglomerates of the fine crystals and finally the products were amorphous at **Mg/(Mg + Ca)** > 0.31. The amt. of irreversible adsorption of CO2 and CH3OH showed a min. at a molar ratio (**Mg + Ca**)/P of ca. 1.56, less than the stoichiometric ratio of 1.67.
ST **magnesium calcium hydroxyapatite** prepn
IT Adsorption
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT 67-56-1, Methanol, properties 124-38-9, Carbon dioxide, properties
RL: PRP (Properties)
(adsorption of; prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca,Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **1305-62-0, Calcium hydroxide**, reactions
7664-38-2, Phosphoric acid, reactions **10377-60-3, Magnesium nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca,Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
RN 127836-54-8 HCAPLUS
CN Calcium magnesium hydroxide phosphate ((Ca,Mg)5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	0 - 5	7440-70-2
Mg	0 - 5	7439-95-4

IT **1305-62-0, Calcium hydroxide**, reactions
10377-60-3, Magnesium nitrate

DN 125:204451
TI Preparation and characterization of **magnesium-calcium hydroxyapatites**
AU Yasukawa, Akemi; Ouchi, Satoshi; Kandori, Kazuhiko; Ishikawa, Tatsuo
CS Sch. Chem., Osaka Univ. Educ., Kashiwara, 582, Japan
SO Journal of Materials Chemistry (1996), 6(8), 1401-1405
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 13
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ST **magnesium calcium hydroxyapatite** prepn
IT Adsorption
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT 67-56-1, Methanol, properties 124-38-9, Carbon dioxide, properties
RL: PRP (Properties)
(adsorption of; prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca,Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **1305-62-0, Calcium hydroxide**, reactions
7664-38-2, Phosphoric acid, reactions **10377-60-3, Magnesium nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca,Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
RN 127836-54-8 HCAPLUS
CN Calcium magnesium hydroxide phosphate ((Ca,Mg)5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	0 - 5	7440-70-2
Mg	0 - 5	7439-95-4

IT **1305-62-0, Calcium hydroxide**, reactions
10377-60-3, Magnesium nitrate
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of magnesium-calcium

AN 1996:514017 HCAPLUS
DN 125:204451
TI Preparation and characterization of **magnesium-calcium hydroxyapatites**
AU Yasukawa, Akemi; Ouchi, Satoshi; Kandori, Kazuhiko; Ishikawa, Tatsuo
CS Sch. Chem., Osaka Univ. Educ., Kashiwara, 582, Japan
SO Journal of Materials Chemistry (1996), 6(8), 1401-1405
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 13
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ST **magnesium calcium hydroxyapatite** prepn
IT Adsorption
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT 67-56-1, Methanol, properties 124-38-9, Carbon dioxide, properties
RL: PRP (Properties)
(adsorption of; prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((Ca,Mg)5(OH)(PO4)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **1305-62-0, Calcium hydroxide**, reactions
7664-38-2, Phosphoric acid, reactions **10377-60-3, Magnesium nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((Ca,Mg)5(OH)(PO4)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
RN 127836-54-8 HCAPLUS
CN Calcium magnesium hydroxide phosphate ((Ca,Mg)5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	0 - 5	7440-70-2
Mg	0 - 5	7439-95-4

IT **1305-62-0, Calcium hydroxide**, reactions
10377-60-3, Magnesium nitrate
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of **magnesium-calcium**

L108 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:514017 HCAPLUS
DN 125:204451
TI Preparation and characterization of **magnesium-calcium hydroxyapatites**
AU Yasukawa, Akemi; Ouchi, Satoshi; Kandori, Kazuhiko; Ishikawa, Tatsuo
CS Sch. Chem., Osaka Univ. Educ., Kashiwara, 582, Japan
SO Journal of Materials Chemistry (1996), 6(8), 1401-1405
CODEN: JMACEP; ISSN: 0959-9428
PB Royal Society of Chemistry
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 13
AB **Magnesium-calcium hydroxyapatite** (MgCaHAP) solid solns. have been prepd. by a wet method from aq. solns. with different molar ratios, **Mg**/(**Mg** + **Ca**), ranging from 0 to 0.5. The MgCaHAP particles formed were characterized by XRD, FTIR, TEM, ICP, TG-DTA and gas adsorption techniques. The **Mg**/(**Mg** + **Ca**) ratios of the formed MgCaHAP particles were less than those of the tarting solns. With increasing **Mg** content, the particles became less cryst. and agglomerates of the fine crystals and finally the products were amorphous at **Mg**/(**Mg** + **Ca**) > 0.31. The amt. of irreversible adsorption of CO2 and CH3OH showed a min. at a molar ratio (**Mg** + **Ca**)/P of **ca**. 1.56, less than the stoichiometric ratio of 1.67.
ST **magnesium calcium hydroxyapatite** prepn
IT Adsorption
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT 67-56-1, Methanol, properties 124-38-9, Carbon dioxide, properties
RL: PRP (Properties)
(adsorption of; prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca**,**Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **1305-62-0, Calcium hydroxide**, reactions
7664-38-2, Phosphoric acid, reactions **10377-60-3, Magnesium nitrate**
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
IT **127836-54-8P, Calcium magnesium hydroxide phosphate** ((**Ca**,**Mg**)5(**OH**)(**PO4**)3)
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(prepn. and characterization of **magnesium-calcium hydroxyapatites**)
RN 127836-54-8 HCAPLUS
CN Calcium magnesium hydroxide phosphate ((Ca,Mg)5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1	14280-30-9
O4P	3	14265-44-2
Ca	0 - 5	7440-70-2
Mg	0 - 5	7439-95-4

IT **1305-62-0, Calcium hydroxide**, reactions
10377-60-3, Magnesium nitrate
RL: RCT (Reactant); RACT (Reactant or reagent)

AN 115:263521
TI Manufacture of ceramics coated with **calcium phosphate** as artificial bones
IN Tsuzuki, Masaji; Miyata, Eiji; Hattori, Masaaki; Miura, Kazunori; Kondo, Kazuo
PA NGK Spark Plug Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C04B041-87
ICS A61L027-00
ICA C04B035-00
CC 63-7 (Pharmaceuticals)
FAN.CNT 1

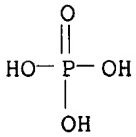
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03137079	A2	19910611	JP 1989-272191	19891019
	JP 07074109	B4	19950809		

AB A ceramic coated with **Ca phosphate** is prepd. for use in manufg. biocompatible artificial bone. A sintered ceramic is coated with a mixt. of **hydroxylapatite** and Ca3(**PO4**)2 (the wt. ratio from 4/1 to 1/5), or coated with a mixt. of **hydroxylapatite** and **Mg phosphate** (the wt. ratio 50/1 to 50/5).

ST ceramic **calcium phosphate** artificial bone
IT Bone
(artificial, manuf. of, with ceramic materials coated with **hydroxylapatite** and **tricalcium phosphate**)
IT Dental materials and appliances
Prosthetic materials and Prosthetics
(implants, manuf. of, with ceramic materials coated with **hydroxylapatite** and **tricalcium phosphate**)
IT 124097-42-3 **137524-23-3**
RL: BIOL (Biological study)
(ceramic coating with, in artificial bone manuf.)
IT **137524-23-3**
RL: BIOL (Biological study)
(ceramic coating with, in artificial bone manuf.)
RN 137524-23-3 HCAPLUS
CN Phosphoric acid, magnesium salt, mixt. with hydroxylapatite (Ca5(OH)(PO4)3) (9CI) (CA INDEX NAME)

CM 1

CRN 10043-83-1
CMF H3 O4 P . x Mg



x Mg

CM 2

CRN 1306-06-5
CMF Ca . H O . O4 P
CCI MNS, TIS
CDES 8:IN,MN,HYDROXYLAPATITE

CM 3

DN 115:263521
TI Manufacture of ceramic coated with **calcium phosphate** as artificial bones
IN Tsuzuki, Masaji; Miyata, Eiji; Hattori, Masaaki; Miura, Kazunori; Kondo, Kazuo
PA NGK Spark Plug Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C04B041-87
ICS A61L027-00
ICA C04B035-00
CC 63-7 (Pharmaceuticals)
FAN.CNT 1

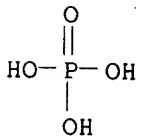
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 03137079	A2	19910611	JP 1989-272191	19891019
JP 07074109	B4	19950809		

AB A ceramic coated with **Ca phosphate** is prepd. for use in manufg. biocompatible artificial bone. A sintered ceramic is coated with a mixt. of **hydroxylapatite** and Ca3(**PO4**)2 (the wt. ratio from 4/1 to 1/5), or coated with a mixt. of **hydroxylapatite** and **Mg phosphate** (the wt. ratio 50/1 to 50/5).

ST ceramic **calcium phosphate** artificial bone
IT Bone
(artificial, manuf. of, with ceramic materials coated with **hydroxylapatite** and **tricalcium phosphate**)
IT Dental materials and appliances
Prosthetic materials and Prosthetics
(implants, manuf. of, with ceramic materials coated with **hydroxylapatite** and **tricalcium phosphate**)
IT 124097-42-3 **137524-23-3**
RL: BIOL (Biological study)
(ceramic coating with, in artificial bone manuf.)
IT **137524-23-3**
RL: BIOL (Biological study)
(ceramic coating with, in artificial bone manuf.)
RN 137524-23-3 HCAPLUS
CN Phosphoric acid, magnesium salt, mixt. with hydroxylapatite (Ca5(OH)(PO4)3) (9CI) (CA INDEX NAME)

CM 1

CRN 10043-83-1
CMF H3 O4 P . x Mg



x Mg

CM 2

CRN 1306-06-5
CMF Ca . H O . O4 P
CCI MNS, TIS
CDES 8:IN,MN,HYDROXYLAPATITE

CM 3

L108 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:658827 HCAPLUS
DN 136:330502
TI Precipitation of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's solution
AU Kuwahara, Hideyuki; Al-Abdullat, Yousef; Mazaki, Naoko; Tsutsumi, Sadami; Aizawa, Tatsuhiko

CS Research Institute for Applied Sciences, Kyoto, 606-8202, Japan
SO Materials Transactions (2001), 42(7), 1317-1321
CODEN: MTARCE; ISSN: 1345-9678
PB Japan Institute of Metals
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
AB A new artificial bone concept by **magnesium** alloys is proposed to think much importance on its homogenization with a surrounding natural hard and soft tissue. **Magnesium** is an essential element for human body, so that **magnesium** bone implants can be expected to be toxicity free even though **magnesium** dissolved into human soft tissue. In addn., **magnesium** base artificial bone has vivo-adaptively to growing bone cells once vivo-coating is formed on the surface of **magnesium** in the inside of soft tissue. In the present paper, its chem. behavior in Hank's soln. (HBSS (+)) is described to simulate biochem. reactions of **magnesium** in the human body. An effect of heat treatment of **magnesium** on its chem. behavior is also investigated. Specimens of 10.times.20 .times. 2 mm3 were used for examg. chem. behaviors of com. grade pure **magnesium** (3N-**Mg**) in a HBSS (+) for various holding time (25-700 h). Specific mass gain of each specimen was measured, the surface microstructure was obsd. by a scanning electron microscope, identification of reaction products were examd. by x-ray diffraction measurements. Chem. compns. of reaction products were also analyzed by an energy dispersion x-ray spectrometry. Mass change of heat-treated 3N-**Mg**, which was heat-treated at 803 K for 90 ks increased with immersing time in HBSS (+) though that of other heat-treated 3N-**Mg** unstably decreased in HBSS (+). **Magnesium** reacted with HBSS (+) and then a **magnesium apatite** was pptd. on the heat-treated 3N-**Mg** specimen surface. The **magnesium apatite** should be described as (Ca0.86Mg0.14)10(**PO4**)6(**OH**)2.
ST **magnesium apatite** bone implant
IT Bone
(artificial; pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT Prosthetic materials and Prosthetics
(implants; pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT Heat treatment
(pptn. of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's soln.)
IT **Apatite**-group minerals
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT **7439-95-4, Magnesium**, biological studies
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
(pptn. of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's soln.)
IT **412319-78-9, Calcium magnesium** hydroxide **phosphate** (Ca4.3Mg0.7(**OH**)(**PO4**)3)
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

HO		14280-30-9
O4P		14265-44-2
Ca	4.3	7440-70-2
Mg	0.7	7439-95-4

L108 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:621137 HCAPLUS
DN 136:8516
TI Synthesis of **Ca-Mg apatite** via a mechanochemical hydrothermal process
AU Liao, Jiefan; Hamada, Kenji; Senna, Mamoru
CS Nara Machinery Co., Ltd., Tokyo, 143-0002, Japan
SO Journal of Materials Synthesis and Processing (2000), 8(5/6), 305-311
CODEN: JMSPEI; ISSN: 1064-7562
PB Kluwer Academic/Plenum Publishers
DT Journal
LA English
CC 49-4 (Industrial Inorganic Chemicals)
Section cross-reference(s): 63
AB Mixts. of **calcium** and **magnesium hydroxides** and **calcium** dihydrogen **phosphate** in various molar ratios were ground in water with a fine grinding machine, which features multi-ring grinding media. Mechanochem. amorphization of the mixts. occurs quickly by grinding. The mixts., after grinding for 5, 20, and 60 min, were then subjected to hydrothermal treatment at 573 K for 24 h. The influence of **Mg**/(**Mg** + **Ca**) molar ratio on the thermal behavior of the mech. activated powders and the structure of the final products has been investigated. The microhomogeneity of **Mg**, **Ca**, and P elements on the samples is enhanced by the mechanochem. treatment. A shift in the x-ray diffraction peaks was obsd. among the final products with different grinding times, presumably due to a partial substitution of **calcium** by **magnesium**.
ST **calcium magnesium apatite** synthesis mechanochem hydrothermal process
IT **1305-62-0, Calcium hydroxide**, processes
1306-06-5D, Hydroxylapatite, magnesium-contg.
1309-42-8, Magnesium hydroxide
7758-23-8, Calcium dihydrogen **phosphate**
303955-04-6, Calcium magnesium hydroxide phosphate [Ca4Mg(**OH**)(**PO4**)3] **303955-05-7, Calcium magnesium hydroxide phosphate** [Ca5Mg5(**OH**)2(**PO4**)6] **374930-58-2, Calcium magnesium hydroxide phosphate** (Ca1.5Mg3.5(**OH**)(**PO4**)3)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(synthesis of **calcium magnesium apatite** by mechanochem. hydrothermal process)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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Ca		9	
Mg		1	7439-95-4

L108 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:658827 HCAPLUS
DN 136:330502
TI Precipitation of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's solution
AU Kuwahara, Hideyuki; Al-Abdullat, Yousef; Mazaki, Naoko; Tsutsumi, Sadami; Aizawa, Tatsuhiko

CS Research Institute for Applied Sciences, Kyoto, 606-8202, Japan
SO Materials Transactions (2001), 42(7), 1317-1321
CODEN: MTARCE; ISSN: 1345-9678
PB Japan Institute of Metals
DT Journal
LA English
CC 63-7 (Pharmaceuticals)
AB A new artificial bone concept by **magnesium** alloys is proposed to think much importance on its homogenization with a surrounding natural hard and soft tissue. **Magnesium** is an essential element for human body, so that **magnesium** bone implants can be expected to be toxicity free even though **magnesium** dissolved into human soft tissue. In addn., **magnesium** base artificial bone has vivo-adaptively to growing bone cells once vivo-coating is formed on the surface of **magnesium** in the inside of soft tissue. In the present paper, its chem. behavior in Hank's soln. (HBSS (+)) is described to simulate biochem. reactions of **magnesium** in the human body. An effect of heat treatment of **magnesium** on its chem. behavior is also investigated. Specimens of 10.times.20 .times. 2 mm3 were used for examg. chem. behaviors of com. grade pure **magnesium** (3N-**Mg**) in a HBSS (+) for various holding time (25-700 h). Specific mass gain of each specimen was measured, the surface microstructure was obsd. by a scanning electron microscope, identification of reaction products were examd. by x-ray diffraction measurements. Chem. compns. of reaction products were also analyzed by an energy dispersion x-ray spectrometry. Mass change of heat-treated 3N-**Mg**, which was heat-treated at 803 K for 90 ks increased with immersing time in HBSS (+) though that of other heat-treated 3N-**Mg** unstably decreased in HBSS (+). **Magnesium** reacted with HBSS (+) and then a **magnesium apatite** was pptd. on the heat-treated 3N-**Mg** specimen surface. The **magnesium apatite** should be described as (Ca0.86Mg0.14)10(**PO4**)6(**OH**)2.
ST **magnesium apatite** bone implant
IT Bone
(artificial; pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT Prosthetic materials and Prosthetics
(implants; pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT Heat treatment
(pptn. of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's soln.)
IT **Apatite**-group minerals
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(pptn. of **magnesium apatite** on pure **magnesium** surface for bone implants)
IT **7439-95-4, Magnesium**, biological studies
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
(pptn. of **magnesium apatite** on pure **magnesium** surface during immersing in Hank's soln.)
IT **412319-78-9, Calcium magnesium** hydroxide **phosphate** (Ca4.3Mg0.7(**OH**)(**PO4**)3)
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)

L108 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:145667 HCAPLUS
DN 124:216642
TI Rietveld structure refinements of **calcium hydroxylapatite** containing **magnesium**
AU Bigi, A.; Falini, G.; Foresti, E.; Gazzano, M.; Ripamonti, A.; Roveri, N.
CS Dip. Chim. 'G. Ciamician' Cent. Studio Fis. Macromolecole, Univ. Studi Bologna, Bologna, I-40126, Italy
SO Acta Crystallographica, Section B: Structural Science (1996), B52(1), 87-92
CODEN: ASBSDK; ISSN: 0108-7681
PB Munksgaard
DT Journal
LA English
CC 75-8 (Crystallography and Liquid Crystals)
AB The crystal structures of four **hydroxylapatite** (HA) samples prepd. from solns. in the presence of 10, 15, 25 and 30 **Mg** -atom-% were studied by x-ray powder pattern fitting. The total **Mg** content of the solid samples, as detd. by chem. anal., was 4.9, 14.1, 20.4 and 30.6 **Mg**-atom-%, resp. Rietveld anal. was performed using the computer program PREFIN implemented with routines which allow the refinements of the av. crystallite sizes. Different refinement procedures were carried out to evaluate the effect of the amorphous and background profiles on the occupancy factor data. For comparison, **Mg**-free **hydroxylapatite** was refined with the same strategies. The results of the different approaches indicate that the degree of **Mg** substitution for **Ca** in the Ha structure can be at most .apprx.10 atom-%. **Mg** substitutes **Ca** preferentially at the 6(h) site. The broadening of the diffraction peaks increases on increasing the total **Mg** content in the solid phase, which is always significantly higher than the amt. incorporated into the HA structure. The excess is probably located in the amorphous phase and/or on the crystallite surface.
ST structure **calcium magnesium hydroxylapatite** crystal
IT Crystal structure
(of **magnesium**-substituted **calcium hydroxylapatite**)
IT **127836-54-8, Calcium magnesium** hydroxide **phosphate** ((Ca,Mg)5(OH)(PO4)3)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
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RN 127836-54-8 HCAPLUS
CN Calcium magnesium hydroxide phosphate ((Ca,Mg)5(OH)(PO4)3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
	1	14280-30-9
	3	14265-44-2
	0 - 5	7440-70-2
	0 - 5	7439-95-4

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